CLAIMS

What is claimed is:

1. A method for controlling a directional angle of a steerable antenna array, wherein a radio signal received via the array contains a preamble portion and a data portion, the method comprising the steps of:

configuring the antenna array for receiving the radio signal in an omni-directional mode;

receiving an initial part of the preamble;

determining a quality metric of the initial part of the preamble;

setting the array to a candidate angle;

receiving a subsequent part of the preamble;

determining a quality metric for the subsequent part so received;

repeating the steps of setting the array, receiving a subsequent preamble part and determining a quality metric for at least one additional candidate angle; and

selecting a candidate angle based on the quality metrics, prior to reception of the data portion.

2. A method as in Claim 1 additionally comprising:

after the step of configuring the array for receiving in an omni-directional mode, but before receiving an initial part of the preamble, setting an automatic gain control.

3. A method as in Claim 1 additionally comprising:

receiving additional preamble signal parts with the array set to the candidate angle.

4. A method as in Claim 3 additionally comprising:

using a subsequent preamble part for frequency estimation.

5. A method as in Claim 1 wherein the radio signal contains a Packet Protocol Data Unit (PPDU) frame that provides the preamble portion.

6. A method as in Claim 1 wherein the radio signal contains a Physical Layer Convergent Procedure (PLCP) comprising multiple short sync pulses, the short sync pulses comprising the preamble parts.

7. A method as in Claim 1 wherein the step of determining a quality metric additionally comprises:

correlating a subsequent preamble part against an expected received preamble part.

8. A method as in Claim 7 wherein the expected received preamble part is a stored optimum response.

9. A method as in Claim 7 wherein the expected received preamble part is recorded from a previous radio signal reception.

10. A method as in Claim 1 wherein the preamble portion comprises short synchronization pulses and long synchronization pulses, and where all steps of setting the array to a candidate angle are completed prior to reception of the long synchronization pulses.

11. A method as in Claim 1 wherein the preamble comprise a series of synchronization pulses, each pulse having a first section and a second section, the first and second pulse section having symmetry about an in-phase and quadrature time axis.

12. A method as in Claim 11 wherein the step of determining a quality metric determines a quality metric for two candidate angles from a single preamble part, by determining a metric for a first candidate angle from first pulse section and determining a second candidate angle from the second pulse section.

13. A method as in Claim 6 wherein the quality metric is determined by the steps of:

performing a Fast Fourier Transform (FFT) on a received short sync pulse and selecting FFT bins corresponding to a desired signal;

performing a first inverse FFT to create a time domain result of the desired signal;

selecting bins not selected in the first step of performing an FFT as bins-not-selected to provide a noise estimate;

performing a second inverse FFT on the bins-not-selected to create a time domain result of noise signals;

establishing a pseudo signal-to-noise ratio estimate as the metric, from a ratio of the two inverse FFT results.